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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,925	04/12/2001	Ronald Patrick Doyle	5577-230	3856

20792 7590 02/09/2005

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EXAMINER

CHANG, SUNRAY

ART UNIT PAPER NUMBER

2121

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/833,925	Applicant(s) DOYLE ET AL.	
	Examiner Sunray Chang	Art Unit 2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-33 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 16 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in responsive to the paper filed on December 14th, 2004.

2. Claims 1 – 33 are presented for examination.

Claims 1 – 33 are rejected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 – 6, 10, 11, 16 – 19, 23 – 25, and 30 – 33 are rejected under 35 U.S.C. 102(b) as being anticipated by A. Dahlin et al. (“A Robust and Scalable Internet Server” Ericsson Telecom AB in Stockholm, Sweden, May 1998, and referred to as Dahlin hereinafter).

4. **Regarding independent claims 1, 30, and 32, Dahlin teaches,**

- A method of distributing workload between servers, [load-balances over a LAN, Page 1, Col. 2, Line 25]
- Receiving requests [listen to several UDP and/or TCP sockets] over a first connection [Front-ends], parsing requests [parses any incoming data] to determine application layer information associated with each of the requests [analyze incoming requests]; [Page 1, Col. 2, Lines 26 – 36, and Page 4, Lines 26 – 28]

Art Unit: 2121

- Selecting destination servers [same host or on other hosts] for corresponding ones of the requests [schedule them to be run] based on the determined application layer information associated with each of the requests [analyze incoming requests]; [Page 4, Lines 28 – 29]
- Distributing requests to the corresponding selected destination servers [schedule them to be run] over second connections [back-ends] associated with respective ones of the destination servers [same host or on other hosts]. [Page 4, Lines 26 – 29, and Page 4, Col. 2, Lines 1 – 7]
- The application layer information comprises at least one of a type of request, client identification, individual user identification, and a cookie [different parts of the request, Page 1, Col. 2, Line 27, and Page 4, Col. 2, Lines 10 – 16; IP address, Page 2, Col. 1, Line 5; cookie, Page 5, Col. 1, Lines 27 – 28, and Page 4, Col. 1, Lines 41 – 43].

5. Regarding dependent claim 2,

- An HTTP 1.1 connection [as needed by HTTP 1.1, Page 5, Col. 1, Lines 5 – 6].

6. Regarding dependent claim 3,

- Determining a start point and an end point [schedule] for each of the requests [incoming requests] within the first connection [Front-ends]; [Page 4, Col. 1, Lines 28 – 32, Page 4]
- Identifying application layer information [parses any incoming data] within each of the requests [incoming requests]. [Page 4, Col. 1, Lines 27 – 28]
- The application layer information comprises at least one of a type of request, client identification, individual user identification, and a cookie [different parts of the request, Page

Art Unit: 2121

1, Col. 2, Line 27, and Page 4, Col. 2, Lines 10 – 16; IP address, Page 2, Col. 1, Line 5; cookie, Page 5, Col. 1, Lines 27 – 28, and Page 4, Col. 1, Lines 41 – 43].

7. Regarding dependent claims 4 and 22,

- Application layer information comprises layer 7 information and above [different parts of the request, Page 1, Col. 2, Line 27 and different tasks, Page 1, Col. 2, Line 31].

Applicants define “layer 7 information and above”, according to specification [Page 3, Line 32 to Page 4, Line 2], may be a type of request, a client identification, and individual user identification, and/or a cookie.

8. Regarding dependent claims 5 and 21,

- The application layer information comprises at least one of a type of request, client identification, individual user identification, and a cookie [different parts of the request, Page 1, Col. 2, Line 27; IP address, Page 2, Col. 1, Line 5; cookie, Page 5, Col. 1, Line 28, and Page 4, Col. 1, Lines 41 – 43].

9. Regarding dependent claim 6,

- Hypertext Transport Protocol (HTTP) requests [native protocol, HTTP, Page 1, Col. 2, Lines 35 – 36].

10. Regarding dependent claim 10,

Art Unit: 2121

- Determining if a second connection associated with a selected destination servers exists [Fig. 2, and 3; Page 4, Col. 1, Lines 26 – 30, Col. 2, Lines 10 – 20, and Page 5, Col. 2, Lines 28 – 31];
- Establishing the second connection to the selected destination server if the second connection does not exist [Page 3, Col. 2, Lines 15 – 24 and Page 5, Col. 2, Lines 28 – 31];
- Distributing a request to the selected destination servers over the second connection [return the IP server or list of servers with the lowest load, Page 1, Col. 2, Lines 21 – 22];
- Repeating the determining, establishing and distributing for each of the requests [dedicated to different tasks, Page 1, Col. 2, Lines 30 – 31].

11. Regarding dependent claims 11 and 25,

- Receiving, parsing, selecting and distributing are carried out by an application executing on a data processing system [EDDIE product suite runs on most existing Internet site configurations, Page 1, Col. 1, Lines 29 – 30].

12. Regarding independent claims 16, 31 and 33,

- A method of distributing workload between servers. [Load-balances over a LAN, Page 1, Col. 2, Line 25]
- Each of the servers is executing an instance of an application, which communicates over a network. [Page 4, Col. 1, Lines 24 – 30, and Col. 2, Line 10 – Page 5, Col. 1, Line 5]

Art Unit: 2121

- Each of HTTP requests [requests, Page 1, Col. 2, Line 26, 36] within a single HTTP 1.1 connection [A compound request/response, as needed by HTTP 1.1, Page 5, Col. 1, Lines 5 – 6] to the application may be distributed [routes the different parts of the request, Page 1, Col. 2, Line 28] to any one of the servers [hosts, Page 1, Col. 2, Line 29],
- Defining a subset of the plurality of servers which are to receive HTTP requests having an indication of high priority [routes the different parts of the request to the hosts most suited to answer them, Page 1, Col. 2, Lines 28 – 29, and Page 4, Col. 2, Lines 10 – 16];
- Establishing an HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Line 5 – 6] responsive to receiving a request for an HTTP 1.1 connection to the application over the network receive requests, Page 1, Col. 2, Line 26];
- Receiving a first Hypertext Transport Protocol (HTTP) request [listen to several UDP and/or TCP sockets] within the HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Lines 5 – 6].
- Parsing the first HTTP request [parses any incoming data] to determine if the first HTTP request has an indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29] based on application layer information included in the first HTTP request [analyze incoming requests]; [Page 4, Lines 26 – 28];
- Distributing the first HTTP request to one of the subset of the servers [routes the different parts of the request to the hosts, Page 1, Col. 2, Lines 28 – 29] over a first connection [Front-ends, Page 4, Col. 1, Line 26] if the first HTTP request has an indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29].

13. Regarding dependent claim 17,

Art Unit: 2121

- Distributing the first HTTP request to a server other than a server in the subset of the destination servers if the first HTTP request does not have an indication of high priority.
[The first time a client accesses a DNS server, the DNS server will not have response time data. It then returns the IP server or list of servers with the lowest load in a WAN, Page 1, Col. 2, Lines 19 – 22].

14. Regarding dependent claim 18,

- Receiving a second HTTP request [listen to several UDP and/or TCP sockets]within the HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Lines 5 – 6].
- Parsing the second HTTP request [parses any incoming data] to determine if the second HTTP request has an indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29] based on application layer information included in the second HTTP request [analyze incoming requests]; [Page 4, Lines 26 – 28]
- Distributing the second HTTP request to one of the subset of the servers [routes the different parts of the request to the hosts, Page 1, Col. 2, Lines 28 – 29] over a second connection [Front-ends, Page 4, Col. 1, Line 26] if the second HTTP request has an indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29]; and
- Repeating [dedicate, Page 1, Line 2, Lines 30 – 31] the receiving, parsing and distributing steps for each subsequent HTTP request received [receives requests, decodes them, and separate the different part of the request, Page 1, Col. 2, Lines 26 – 27] within the HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Lines 5 – 6].

15. Regarding dependent claim 19,

- Determining a load [overload] associated with respective servers in the subset of the servers [local back-ends]; [Page 4, Col. 1, Lines 30 – 35]
- Distributing the first HTTP request [schedule requests] to the server in the subset of the servers [back-ends on a remote LANs] based on the determined load [overload]. [Page 4, Col. 1, Lines 30 – 35]

16. Regarding dependent claim 23,

- Determining a start point and an end point [schedule] for the first HTTP request [incoming requests] within the HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Lines 5 – 6]; [Page 4, Lines 28 – 32]
- Identifying application layer information [parses any incoming data] within the first HTTP request [incoming requests]. [Page 4, Lines 27 – 28]
- Determining if the application layer information is relevant application layer information. [Routes the different parts of the request to the hosts most suited to answer them, Page 1, Col. 2, Lines 28 – 29]

17. Regarding dependent claim 24,

- Determining if a first connection exists [first time a client accesses a DNS, Page 1, Col. 2, Line 19, Page 4, Col. 2, Lines 10 – 20, and Fig. 3];
- Establishing the first connection if the first connection does not exist [will not have response time data, Page 1, Col. 2, Line 20, Page 3, Col. 2, Lines 15 – 24];

Art Unit: 2121

- Distributing the first HTTP request over the first connection [return the IP server or list of servers with the lowest load, Page 1, Col. 2, Lines 21 – 22].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18. **Claims 7 – 9, 12 – 15, 20 – 22, and 26 – 29 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Dahlin, and in view of Mohit Aron et al. (“Efficient Support For P-HTTP in Cluster-Based Web Servers”, Department of Computer Science, Rice University, June, 1999, and referred to as Aron hereinafter).

(Dahlin as set forth above generally discloses the basic inventions.)

Art Unit: 2121

19. **Regarding Claim 7**, Dahlin teaches determining if the application layer information associated with each requests is relevant application layer information. [Routes the different parts of the request to the hosts most suited to answer them, Page 1, Col. 2, Lines 28 – 29, and Page 4, Col. 2, Lines 10 – 16]

Dahlin does not teach selecting one of a subset of the destination servers if the application layer information associated with each of the plurality of requests is relevant application layer information; and selecting a destination server other than a destination server in the subset of the destination servers if the application layer information associated with each of the plurality of requests is not relevant application layer information.

Aron teaches selecting one of a subset of the destination servers if the application layer information associated with each of the plurality of requests is relevant application layer information; and selecting a destination server other than a destination server in the subset of the destination servers if the application layer information associated with each of the plurality of requests is not relevant application layer information [Fig. 1, Page 3, and Col. 2, Lines 30 – 37], for the purpose of increasing the likelihood that the requests ind the requested targets.

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include “selecting one of a subset of the destination servers if the application layer information associated with each of the plurality of requests is relevant application layer information; and selecting a destination server other than a destination server in the subset of the destination servers if the application layer information

Art Unit: 2121

associated with each of the plurality of requests is not relevant application layer information”, for the purpose of increasing the likelihood that the requests find the requested targets.

20. Regarding Claim 8,

- Determining a load [overload] associated with respective destination servers in the subset of destination servers [local back-ends]; and selecting the destination server in the subset of the destination servers [schedule requests to back-ends on remote LANs] based on the determined load [overload]. [Page 4, Col. 1, Line 30 – 35]

21. Regarding Claims 9 and 20,

- The subset of destination servers includes one server [hosts] which is to receive requests [routes the different parts of the request] having an indication of high priority [most suited to answer them]. [Page 1, Col. 2, Line 28 – 29]
- The indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29] is determined based on [front-end analyze incoming requests and schedule them, Page 4, Col. 1, Line 28 – 29] the existence and nonexistence of relevant application layer information [same host or on the other hosts, Page 4, Col. 1, Line 28 – 30].

22. Regarding Claims 12 and 26, Dahlin teaches a method [eddie product suite, Page 1, Col. 1, Line 21]

Dahlin does not teach tracking the requests and corresponding responses to the requests.

Aron teaches tracking the requests and corresponding responses to the requests [a request arrives on a client connection, the front-end assigns the request, and forwards the client's HTTP request message on the appropriate back-end connection. When the response arrives from the back-end node, the front-end forwards the data on the client connection, Page 3, Col. 2, Line 18 – 23], for the purpose of forwarding the server's responses back to the clients who made the requests.

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "tracking the requests and corresponding responses to the requests" for the purpose of forwarding the server's responses back to the clients who made the requests.

23. Regarding Claims 13 and 27,

Dahlin teaches routing the requests using network address translation [routes the different parts of the request to the hosts, Page 1, Col. 2, Line 28 – 29].

Dahlin does not teach a routing layer of a communication protocol stack.

Aron teaches a routing layer [user-level processes, Page 10, Col. 1, Line 22] of a communication protocol stack [protocol stacks, Page 10, Col. 1, Line 23], for the purpose of providing a control session.

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "a routing layer of a communication protocol stack" for the purpose of providing a control session.

24. Regarding Claims 14 and 28,

Dahlin teaches routing the requests using network address translation [routes the different parts of the request to the hosts, Page 1, Col. 2, Line 28 – 29].

Dahlin does not teach using session control translation at the routing layer of the communication protocol stack.

Aron teaches using session control [control session, Page 10, Col. 1, Line 34] translation at the routing layer [user-level processes, Page 10, Col. 1, Line 22] of the communication protocol stack [protocol stacks, Page 10, Col. 1, Line 22 – 23].

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "using session control translation at the routing layer of the communication protocol stack" for the purpose of providing a control session.

25. Regarding Claims 15 and 29,

Art Unit: 2121

Dahlin teaches routing the requests using network address translation [routes the different parts of the request to the hosts, Page 1, Col. 2, Line 28 – 29].

Dahlin does not teach routing the corresponding responses to the requests using network address translation at a routing layer of a communication protocol stack.

Aron teaches routing the corresponding responses to the requests [sending multiple server responses, Page 2, Col. 1, Line 29] using session control [control session, Page 10, Col. 1, Line 34] translation at the routing layer [user-level processes, Page 10, Col. 1, Line 22] of the communication protocol stack [protocol stacks, Page 10, Col. 1, Line 22 – 23], for the purpose of forwarding the server's responses back to the clients who made requests.

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "routing the corresponding responses to the requests using network address translation at a routing layer of a communication protocol stack" for the purpose of forwarding the server's responses back to the clients who made the requests.

Response to Amendment

Claim Rejections - 35 USC § 102

26. Regarding independent claims 1, 30, 32, and 16, 31, 33 applicants argue that "nothing in the cited portion of Dahlin discloses or suggests receiving a plurality of requests over a first

Art Unit: 2121

connection as recited in Claim 1” [Page 11, lines 20 – 21] the examiner disagrees. Dahlin anticipates “receiving a plurality of requests over a first connection” It is respectfully considered that applicants have not given Dahlin a fair reading. From the cited portion of Dahlin, it is recited that the server “parses **any** incoming data” If the server parses **any** incoming data then it must parse from the UDP and TCP sockets. Furthermore, in order to parse data, the data must be received. Therefore, the server received data from the UDP and TCP sockets.

27. Applicants argue that Dahlin does not disclose “parsing the request for application layer information” [Page 12, Lines 6 – 7], “using the application layer information to select destination servers” [Page 12, Lines 8 – 9], and “receiving a plurality of requests over a single connection and distributing the request over a plurality of second connections” [Page 12, Lines 11 – 12] in claim 1, 30 and 32. Applicants’ arguments are not persuasive. Dahlin is considered to disclose selecting the servers based on the application layer information since this data is inherently necessary to determine where the data should be routed.

Further, applicants define “application layer information”, according to the specification [Page 3, Line 32 to Page 4, Line 2] and claim 5 as “a type of request”, “a client identification”, and “individual user identification”, and/or “a cookie”, has been anticipated by Dahlin [Page 4, Col. 2, Lines 10 – 16, Col. 1, Lines 40 – 43, and Page 5, Col. 1, Lines 27 – 28]. Wherein Dahlin recites that a server has a frontend and a backend and that the backend maybe a cookie. The cookie is used to determine the backend server that will receive the data.

The rejection is retained.

Art Unit: 2121

28. Regarding independent claims 16, 31, and 33, applicant argues that Dahlin does not disclose “a plurality of servers each executing an instance of an application”, “defining a subset of the plurality of servers which are to receive HTTP requests having an indication of high priority” [Page 13, Lines 8 – 9, and 14 – 16] in claims 16, 31, and 33. Dahlin, as set forth above, discloses a plurality of servers each executing an instance of an application. On page 4, Col. 1, Lines 28 – 35, Dahlin recites that the backends may be on the same host or different hosts. Therefore, there are a plurality of servers, however, applicant may wish to define a “subset”.

The rejection is retained.

29. Regarding dependent claims 3 and 23, applicant argues that Dahlin does not disclose the recitations in claims 3 and 23. The examiner disagrees. Dahlin teaches that “front-ends analyze [determining] incoming requests [requests] and schedule the requests to be run by back end” [Page 4, Col. 1, Lines 28 – 32]. Maybe Dahlin does not clearly pointed out that there are start points and end points in the requests to be determined, but it is necessary for requests to include “start point” and “end point” for “front-end” to “analyze and schedule” requests to the back-ends.

The rejection is retained.

30. Applicant argues that Dahlin does not disclose “determining if a second connection associated with a selected destination servers exists” and “establishing the second connection to the selected destination server if the second connection does not exist” in claims 10 and 24. The examiner disagrees. Dahlin teaches “DNS lookup a more suitable server can be assigned” [Page

Art Unit: 2121

3, Col. 2, Lines 15 – 24], “The back-end is assigned either because it has a low load or because it has unique content or services not available elsewhere” [Page, 4, Col.2, Lines 10 – 20], and Fig. 3 in Page 6, showing the hosts can have more than one link processing in the same time.

The rejection is retained.

Claim Rejections - 35 USC § 103

31. Applicants’ argument with respect to Dahlin and claim 7 is agreed with. However, Dahlin is not cited for the teachings argued. Aron is cited for these teachings.

Applicants’ argument, “there is no motivation to combine the cited reference”, is disagreed with, the motivation, “for the requests find the requested targets”, can be found in Aron [Page 2, Col. 2, Lines 35 – 36], used to select the destination server, selecting one of a subset of the destination servers, and to distribute the requests.

The rejection is retained.

Conclusion

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sunray Chang whose telephone number is (571) 272-3682. The examiner can normally be reached on M-F 7:00-4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Anthony Knight can be reached on (571) 272-3687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-746-3506.

Art Unit: 2121

Sunray Chang
Patent Examiner
Group Art Unit 2121
Technology Center 2100
U.S. Patent and Trademark Office

February 7, 2005



Anthony Knight
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